

Listing of claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 (currently amended). A mammalian *in vitro* mRNA decapping system ~~composition~~ comprising:

- C³
- a) a mammalian cell cytoplasmic extract substantially free of polysomes;
 - b) a methylated cap analog; and
 - c) a cap-labeled mRNA substrate.

2 (currently amended). The mammalian *in vitro* mRNA decapping system ~~composition~~ of claim 1 wherein said mammalian cell cytoplasmic extract is an S100 extract which comprises a 100,000 x g, 1 hour supernatant from a mammalian cell lysate.

3 (currently amended). The mammalian *in vitro* mRNA decapping system ~~composition~~ of claim 2 wherein said mammalian cell cytoplasmic extract is prepared by dialysis of said extract containing 10% glycerol.

4 (cancelled).

5 (currently amended). The mammalian *in vitro* mRNA decapping system ~~composition~~ of claim-4 1 wherein said mammalian cell cytoplasmic extract is a HeLa S100 cell extract.

6 (currently amended). The mammalian *in vitro* mRNA decapping system
~~composition~~ of claim 1 wherein said methylated cap analog is ^{7me}GpppG or ^{7me}GTP.

7 (cancelled).

8 (cancelled).

9 (currently amended). The mammalian *in vitro* mRNA decapping system
~~composition~~ of claim 1 wherein said cap-labeled mRNA substrate is labeled at the
alpha phosphate of the cap.

10 (currently amended). The mammalian *in vitro* mRNA decapping system
~~composition~~ of claim 9 1 wherein ~~said label is~~ said cap-labeled mRNA substrate is
labeled at the cap of said cap-labeled mRNA substrate by a label selected from the
group consisting of a radioactive label, a non-radioactive isotopic label, a fluorescent
moiety, a visibly-detectable moiety, a releasable substrate or a co-factor for a chemical
or and enzymatic reaction.

11 (currently amended). The mammalian *in vitro* mRNA decapping system
~~composition~~ of claim 1 wherein said cap-labeled mRNA substrate comprises poly(A) or
at least one RNA element.

12 (currently amended). The mammalian *in vitro* mRNA decapping system
~~composition~~ of claim 11 wherein said RNA element is an AU-rich element.

13 (cancelled or currently amended). The mammalian *in vitro* mRNA decapping
system ~~composition~~ of claim 11 wherein said RNA element is a pyrimidine-rich element.

14 (withdrawn)

15 (withdrawn)

16 (withdrawn)

17 (currently amended). A kit for measuring ~~*in vitro*~~ mammalian mRNA decapping *in vitro* comprising:

- C³
- a) a mammalian cell cytoplasmic extract; ~~and~~
 - b) a methylated cap analog; and
 - c) cap-labeled mRNA substrate.

18 (cancelled).

19. The kit of claim 18 17 wherein said cap-labeled mRNA substrate is labeled at the alpha phosphate of the cap.

20. The kit of claim ~~18~~ 17 wherein ~~said label is~~ said cap-labeled mRNA substrate is labeled at the cap of said cap-labeled mRNA substrate by a label selected from the group consisting of a radioactive label, a non-radioactive isotopic label, a fluorescent moiety, a visibly-detectable moiety, a releasable substrate or a co-factor for a chemical ~~or~~ and enzymatic reaction.

21 (cancelled).

²²
~~22~~ (new) The mammalian *in vitro* mRNA decapping system of claim 1 further comprising means for sequestering proteins that bind to poly(A).

²⁸
~~28~~ (new) The mammalian *in vitro* mRNA decapping system of claim 11 further comprising means for stimulating decapping of the cap-labeled mRNA substrate wherein the cap-labeled mRNA substrate comprises poly (A).

²⁹
~~24~~ (new) The mammalian *in vitro* mRNA decapping system of claim 11 further comprising a cold poly(A) competitor RNA.

³⁰
~~25~~ (new) The mammalian *in vitro* mRNA decapping system of claim 12 further comprising means for reducing decapping of the cap-labeled mRNA substrate.

³¹
~~26~~ (new) The mammalian *in vitro* mRNA decapping system of claim 12 further comprising an ARE competitor RNA.

³²
~~27~~ (new) The kit of claim 17 wherein the cap-labeled mRNA substrate comprises Poly(A).

³³
~~28~~ (new) The kit of claim ³²~~27~~ further comprising means for stimulating decapping the cap-labeled mRNA substrate.

³⁴
~~29~~ (new) The kit of claim ³²~~27~~ further comprising a cold poly(A) competitor RNA.

³⁵
~~30~~ (new) The kit of claim 17 wherein the cap-labeled mRNA substrate comprises a RNA element.

³⁶
~~31~~ (new) The kit of claim ³⁵~~30~~ wherein the RNA element is an AU-rich element.

³⁷
~~32~~ (new) The kit of claim ³⁶~~31~~ further comprising means for reducing decapping the cap-labeled mRNA substrate.

³⁸
~~33~~ (new) The kit of claim ³⁶~~31~~ further comprising an ARE competitor RNA.

Rule 1.126 ³⁹~~34~~ (new) A mammalian *in vitro* mRNA decapping system comprising:

- a) a mammalian cell cytoplasmic extract substantially free of polysomes;
- b) a cap-labeled mRNA substrate; and
- c) means for decapping the cap-labeled mRNA substrate.

Rule 1.126 ⁴⁰~~35~~ (new). A kit for measuring mRNA decapping *in vitro* comprising:

- a) a mammalian cell cytoplasmic extract;
 - b) a cap-labeled mRNA substrate, and
 - c) means for decapping the cap-labeled mRNA substrate.
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